

ABSTRACT OF THE DISCLOSURE

An  $\alpha$ -ray measuring apparatus is provided for accurately analyzing the energy of a trace of  $\alpha$ -rays emitted from a sample in a short time using semiconductor detectors which excel in energy resolution. The  $\alpha$ -ray measuring apparatus comprises an  $\alpha$ -ray detector including a plurality of semiconductor detectors, an adder for adding output signals from the respective semiconductor detectors, an anticoincidence counter for anticoincidentally counting the output signals from the respective semiconductor detectors, and a peak analyzer for analyzing an energy distribution of the  $\alpha$ -rays based on an addition of the output signals from the semiconductor detectors which are not anticoincidentally counted. Since the output signals from the plurality of semiconductor detectors are added to increase the area of a sample under measurement and also remove background noise, the  $\alpha$ -ray measuring apparatus can more accurately analyze the energy of the  $\alpha$ -rays while reducing a measuring time.